

APPENDIX I

**HABITAT TYPES OF THE
INTERNATIONAL SPACE RESEARCH PARK ALTERNATIVE SITES
(modified from NASA 1997)**

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Terrestrial Habitats. Areas are considered terrestrial habitats (uplands) if they are not subject to flooding on a regular basis or have only brief period of standing water. The transition from upland to wetland is often gradual, therefore some arbitrary divisions are necessary (NASA 1997).

Oak Scrub (FLUCCS-4210). The oak scrub community on the Alternative 2 site occurs on the moderately well-drained Pomello sands on old dune topography. It is an open to dense shrub community dominated by myrtle oak (*Quercus myrtifolia*), Chapman oak (*Quercus chapmanii*), sand live oak (*Quercus geminata*), and saw palmetto. Other common shrubs are rusty lyonia (*Lyonia ferruginea*), staggerbush, (*Lyonia fruticosa*), fetterbush (*Lyonia lucida*), and blueberry (*Vaccinium myrsinites*). In areas on less well-drained soils, saw palmetto becomes more common.

Scrubby Pine Flatwoods (FLUCCS-4111). The scrubby pine flatwoods community on the Alternative 2 site occurs on moderately-well drained Pomello sands to the poorly drained Immokalee sands soil types. It has an open canopy of slash pine (*Pinus elliotii*). The understory is dominated by myrtle oak, Chapman oak, sand live oak, saw palmetto, Lyonia spp., and wire grass (*Aristida spp.*) in the better drained areas of the site. In the poorly drained areas, saw palmetto has greater dominance and gallberry (*Ilex glabra*) also becomes more important. An area of historical disturbance to this community type is defined on the alternative 2 site as Disturbed Scrubby Flatwoods (FLUCCS-7400). This area was cleared. The predominant recruiting vegetation are flatwoods associates, however the soil disturbance has allowed for colonization by exotic plants, Brazilian pepper (*Schinus terebinthifolius*) and Napier grass (*Pennisetum purpureum*).

Pine-Mesic Oak Hammock (FLUCCS-4140). The pine-mesic oak hammock community defined on the SERPL Expansion site has a dense canopy composed of primarily laurel oak (*Quercus laurifolia*), elm (*Ulmus americana*), slash pine (*Pinus elliotii*) and red mulberry (*Morus rubra*) and cabbage palm (*Sabal palmetto*). Shrubs of tropical affinity including lancewood (*Nectandra coriaceae*), myrsine (*Rapanea punctata*), and wild coffee (*Psychotria spp.*) are present in the understory. This upland hammock is associated with the very poorly drained Copeland soils.

Citrus Groves (FLUCCS-2211). The citrus groves on the Preferred Alternative 1 and SERPL Expansion parcel are underlain by the very poorly drained Copeland soils that historically were associated with diverse mesic hammocks. Citrus groves are the only agricultural community currently occurring within KSC. They are dominated by citrus trees (*Citrus spp.*) with associated grasses and weedy herbs. Guineagrass (*Panicum maximum*) is abundant within the abandoned citrus grove areas.

Wetland Habitats. Wetlands are those areas with permanent or seasonal high water tables which cause standing water to occur part or all of the year.

Mixed Wetland Hardwoods (FLUCCS-6170). This hardwood swamp community is a closed forest dominated by red maple (*Acer rubrum*), elm and cabbage palm. In the understory, royal fern (*Osmunda regalis*) and Virginia chain fern (*Woodwardia virginica*) occur. On the Preferred Alternative 1 site and SERPL Expansion parcel these hardwood wetlands have been severely altered by surrounding citrus production resulting in significant infestation by Brazilian pepper.

On the Alternative 2 site, this wetland community occurs in the deeper pockets of the north-south oriented swales and exhibits an understory composed of coastal plain willow (*Salix caroliniana*) and buttonbush (*Cephalanthus occidentalis*) in association with a diverse variety of ferns, sedges, rushes, and grasses. They may have developed within the predominant graminoid wetland system as a result of historic alterations to the wetland hydrology and/or exclusion of fire (Schmalzer and Hinkle 1985).

Exotic Wetlands - Brazilian Pepper (FLUCCS-6190). This Brazilian pepper dominated community occurs in historical wetland areas modified by surrounding or adjacent citrus production or construction. The Brazilian pepper forms nearly pure strands although some leather fern (*Acrostichum danaeifolium*) may persist in the mainly bare understory.

Wetland Forest Mixed (FLUCCS-6300). This is a wet hardwood hammock community found on the Preferred Alternative 1 site is underlain by the very poorly drained Copeland soils. It is characterized by a dense canopy dominated by hackberry (*Celtis laevigata*), elm, laurel oak, red mulberry, and cabbage palm. The understory is characterized by shrubs of tropical affinity, mainly myrsine and wild coffee, intermingled with ferns and low herbaceous perennials, such as green dragon (*Arisaema dracontium*) and jack-in-the-pulpit (*A. triphyllum*).

Freshwater Swale Marsh (FLUCCS-6410). Located on Alternative 2 site this wetland community occurs as swales in scrub and slash pine flatwoods areas dominated by graminoid communities. These have been mapped as a single vegetative type but three major subtypes can be recognized on the ground. Shallow swales or the edges of larger ones are dominated by several species of beardgrass (*Andropogon spp.*) and Curtiss reedgrass (*Calamovilfa curtissii*), a threatened plant species. In areas with longer hydroperiods, sand cordgrass (*Spartina bakeri*) is dominant. Sawgrass (*Cladium jamaicense*) dominates areas with deeper water and longer hydroperiods. Other species occurring include Virginia chain fern, swamp fern (*Blechnum serrulatum*), bull-tongue arrowhead (*Sagittaria lancifolia*), and maidencane (*Panicum hemitomon*).

Aquatic Resources. Aquatic resources for purposes of this document are defined as permanently flooded systems.

Aquatic resources on the Preferred Alternative 1 site, Alternative 2 site, or SERPL Expansion parcel are limited to artificial open water bodies, Reservoirs < 10 ac. (FLUCCS-5340) and drainage ditches (FLUCCS-5100) constructed primarily to support citrus cultivation or to route stormwater flows to nearby estuarine waters.